

What is claimed is:

5 1. A precision positioning unit comprising a table
on which an article is to be placed, a linearly movable
rod which is connected with the table at one end or a vi-
cinity thereof and further connected with a rod actuating
device at another end or a vicinity thereof, said rod
actuating device capable of linearly moving the rod for-
ward and backward, characterized in that:

10 the rod is connected with the rod actuating device
via cushion mechanism; and

15 by the side of the rod is placed a rod movement con-
trol device comprising an elastic member, a ultrasonic
transducer, and a ultrasonic emitting surface, the elas-
tic member being constituted to push the ultrasonic emit-
ting surface to a side surface of the rod when the ultra-
sonic transducer is inactive, and the ultrasonic trans-
ducer functioning to draw the ultrasonic emitting surface
20 away from the rod when it is active.

25 2. The precision positioning unit of claim 1,
wherein a pair of the rod movement control device are
placed symmetrically around an axis of the rod.

3. The precision positioning unit of claim 1,
wherein the ultrasonic transducer is placed and connected
between two solid members using a bolt.

30 4. The precision positioning unit of claim 1,
wherein the ultrasonic emitting surface is composed of a
friction pad.

35 5. The precision positioning unit of claim 4,
wherein the friction pad comprises carbon fiber rein-
forced plastic material.

100004807-120704
6-17-03

6. The precision positioning unit of claim 1, wherein the ultrasonic emitting surface protrudes in a center thereof.

5 7. The precision positioning unit of claim 1, wherein the elastic member is composed of spring.

8. The precision positioning unit of claim 1, wherein the rod actuating device comprises a stepping
10 motor and a ball screw and the cushion mechanism comprises a spring.

9. The precision positioning unit of claim 1, wherein the rod actuating device is a voice coil motor
15 and the cushion mechanism is included in the voice coil motor.

10. The precision positioning unit of claim 1, wherein the table is placed on a substrate in such manner
20 that the table can slide linearly.

11. A linear movement control unit comprising a linearly movable rod which is connected with a rod actuating device at one end or a vicinity thereof, said rod
25 actuating device capable of linearly moving the rod forward and backward, characterized in that:

the rod is connected with the rod actuating device via cushion mechanism; and

by the side of the rod is placed a rod movement control device comprising an elastic member, a ultrasonic
30 transducer, and a ultrasonic emitting surface, the elastic member being constituted to push the ultrasonic emitting surface to a side surface of the rod when the ultrasonic transducer is inactive, and the ultrasonic transducer functioning to draw the ultrasonic emitting surface
35 away from the rod when it is active.

10004807-120704

12. The linear movement control unit of claim 11, wherein a pair of the rod movement control device are placed symmetrically around an axis of the rod.

5 13. The linear movement control unit of claim 11, wherein the ultrasonic transducer is placed and connected between two solid members using a bolt.

10 14. The linear movement control unit of claim 11, wherein the ultrasonic emitting surface is composed of a friction pad.

15 15. The linear movement control unit of claim 14, wherein the friction pad comprises carbon fiber reinforced plastic material.

16. The linear movement control unit of claim 11, wherein the elastic member is composed of spring.

20 17. The linear movement control unit of claim 11, wherein the rod actuating device comprises a stepping motor and a ball screw and the cushion mechanism comprises a spring.

25 18. The linear movement control unit of claim 11, wherein the rod actuating device is a voice coil motor and the cushion mechanism is included in the voice coil motor.

30 19. The linear movement control unit of claim 11, wherein the ultrasonic emitting surface protrudes in a center thereof.

35

1000483 120701